CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SANTA ANA REGION

ORDER NO. R8-2004-0008

MONITORING AND REPORTING PROGRAM (M&RP) NO. R8-2004-0008
FOR

THE CITY OF REDLANDS

CALIFORNIA STREET LANDFILL
CLASS III SOLID WASTE DISPOSAL SITE
SAN BERNARDINO COUNTY

A. GENERAL

1. Groundwater beneath the California Street Landfill (CSL) exceeds the Ground Water Protection Standard (water standard) of Title 27, California Code of Regulations (27 CCR) § 20390, §20395, and §20400, or Title 40, Federal Code of Regulations (40 CFR) §§258.50 et seq., for tetrachloroethylene (PCE), trichloroethylene (TCE), dichloroethylene (DCE), dibromochloropropane (DBCP), and perchlorate. All of these exceedences have been attributed to sources other than the CSL. The City of Redlands (hereinafter "the Discharger") shall perform monitoring activities to track constituents already detected in groundwater and to detect any constituents of concern at the CSL attributable to landfill activities. The Discharger shall implement appropriate data analysis methods in accordance with 27 CCR §20415(e)(6 through 10) for groundwater data collected.

2. The concentration limit for any given Monitoring Parameter (MP)[1] or Constituent of Concern (COC)[2] in a given monitored medium (e.g., the uppermost aquifer) at a municipal solid waste (MSW) landfill shall be established in accordance with paragraphs A.4.a and A.4.e of this Monitoring and Reporting Program (M&RP). These concentration limits shall be used as the basis of comparison with data from the monitoring points in that monitored medium.

3. Compliance and background monitoring points for the existing permitted and new expansion areas of the CSL shall be established and monitored in accordance with 27 CCR §20405 (Detection Monitoring Program) and 40 CFR §258.54 (Detection Monitoring Program), in accordance with the monitoring parameters (see Attachment D, Table 1, MPs for groundwater, surface water, soil pore liquids, landfill gas, etc.), monitoring and reporting schedules (see Attachment D, Table 5), and analytical methods (see Attachment D, Table 6) outlined in this M&RP:

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[1] See Attachment D, Table 1 and paragraph A.6, below, of this M&RP for a list of monitoring parameters and data analysis.
[2] See Attachment D, Table 1 and paragraph A.7, below, of this M&RP for COC lists.

a. **Monitoring Parameters (MP)** – The Discharger shall analyze all groundwater monitoring points in accordance with the monitoring frequency and for the MP listed in Attachment D, Table 1 of this M&RP. The MP list shall be updated whenever a constituent, not already on the MP list, is detected and verified in a retest during the five-yearly Constituent of Concern (COC) scan (see paragraph 3.b, below).

b. **Five-Yearly COC Scan** — Every five years, subsequent to 2004, the Discharger shall analyze all ground water monitoring points for the detectable presence (including trace determinations) of all COCs in COC-List 1 and COC-List 2 (see Attachment D, Table 1). This constitutes the means by which the Discharger will meet or exceed the requirements of 40 CFR §258.54.

   i. A minimum of one sample from each groundwater monitoring well must be collected and analyzed during each COC scanning event. If a COC is detected that is not yet on the monitoring parameter list, the Discharger shall, within 30 days, take a single resample from the indicating well(s) and reanalyze it only for the indicated constituent(s).

   ii. Any COC detected in samples collected from a groundwater monitoring well, and verified by a retest, automatically becomes part of the MP list for the facility. The Discharger shall notify Regional Board staff (see paragraph C.7 of this M&RP) of any such change immediately, via phone or e-mail, shall note it in the operating record within 14 days of the verification, and shall note prominently the constituent(s) added to the MP list in the next scheduled monitoring report.

4. STATISTICAL DATA ANALYSIS METHODOLOGY

a. Intra-well comparison methods shall be used for all compliance wells for all constituents that are detectable at concentrations above their respective Method Detection Limit[3] (MDL) in 10% or more of the background data to date. Therefore, the concentration limit for such a constituent, at any given compliance well, shall be the background value as indicated by all validated data from that compliance well in the period including the years 1996 and through 2004. Every two years, at the beginning of the second (spring) quarter monitoring period (April 1), newer data shall be added to the background data set for each compliance well after being validated by a method approved by the Executive Officer of the Regional Board. At any time, the background data set shall consist of, at a minimum, the last five (5) years of monitoring data, except for newly detected monitoring parameters for which there is less than 5 years of data available.

b. If a control chart approach is used to evaluate water quality monitoring data, the Discharger shall performance the analysis in accordance with 27 CCR §20415(e)(9)(C).

c. In the event that an approved data analysis method provides a preliminary indication that a given monitoring parameter has a measurably significant increase at a given

[3] The method detection limit, or MDL, is the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero, as defined in 40 CFR §136, Appendix B.

well, the Discharger shall conduct a verification procedure (two discrete retests) in accordance with 27 CCR §20415(e)(8)(E).

d. The verification procedure shall be performed only for the constituent(s) or parameter(s) that has shown "measurably significant" (see 27 CCR §20164 for definition) evidence of a release, and shall be performed only for those monitoring points at which a release is indicated.

e. For any monitoring parameter that is detectable at concentrations above its respective MDL in 10% or less of the background data to date, the constituent's concentration limit shall be its MDL. A measurable exceedance of this concentration limit shall be determined by application of the non-statistical analysis method described in paragraph A.5 of this M&RP.

f. Water Quality Monitoring Approach — Except for COC scans, discussed under paragraph A.3.b of this M&RP, the monitoring approach used for each MP at each compliance well (well/MP pair) shall be controlled by whether that MP has exhibited a measurably significant increase at that well. Therefore, the Discharger shall monitor each well/MP pair in one of two modes, as follows:

   i. **Detection Mode** — For a MP that has not shown a measurably significant increase at that compliance well, the purpose of monitoring, for that well/MP pair, is to watch for the MP's arrival at that well at a concentration strong enough to trigger a measurably significant release using an appropriate statistical or nonstatistical data analysis method. Once an MP shows a measurably significant increase at a well, future monitoring of that well/MP pair is done in "tracking mode"; or

   ii. **Tracking Mode** — For a MP that has produced a measurably significant increase at that well, the purpose of the monitoring, for that well/MP pair, is to verify the suitability and effectiveness of the existing or proposed corrective action measures by tracking changes in the MP's concentration at that location via a concentration-versus-time plot.

g. **Detection Mode Data Analyses** — The following applies to all detection mode data analyses (i.e., this paragraph does not apply to the COC scans under paragraphs A.3.b or B.1.b.v.):

   i. **Monitoring Parameters Readily Detectable in Background** — At any given monitoring point, the Discharger shall apply an appropriate statistical analysis for each detection mode monitoring parameter that exceeds its-respective MDL <u>in at least 10%</u> of the applicable background data set. The Discharger is currently using the inter-well, Parametric and non-Parametric ANOVA methods for statistical data analysis. In accordance with 27 CCR §20415(e)(7)(B)(2), the Discharger shall not change the data analysis method unless as directed or approved by the Executive Officer of the Regional Board.

   ii. **Monitoring Parameters Not Readily Detectable in Background** — For any monitoring point at which one or more monitoring parameters, in detection mode, exceed their respective MDL in <u>less than 10%</u> of the applicable background data set, the Discharger shall analyze the data for these monitoring parameters via the California Non-Statistical Data Analysis Method (CNSDAM) test described in paragraph A.5 of this M&RP.

5. CALIFORNIA NON-STATISTICAL DATA ANALYSIS METHOD (CNSDAM)

a. **Non-Statistical Method For Seldom-Detected Monitoring Parameters in Detection Mode -** For any given compliance (downgradient) well, regardless of the monitoring program in effect (DMP, EMP, AMP, or CAP), the Discharger shall use this data analysis method, jointly, for all constituents on the "scope list" of paragraph A.5.a.i of this M&RP (or, for each retest sample using the modified scope list of paragraph A.5.b.ii).

i. **Scope List** — Create a current "scope list" showing each detection mode monitoring parameter, at that well, that exceeds its MDL in less than 10% of its background data (see paragraph A.4.f.i of this M&RP).

ii. **Two Triggers** — From the scope list made under paragraph A.5.a.i, above, for an initial test (or, for a retest using the modified scope list under A.5.b.ii, below), identify each monitoring parameter in the current sample from that compliance well that exceeds its respective MDL or Practical Quantitation Level (PQL)[4]. The Discharger shall conclude that these identified monitoring parameters provide a tentative indication (or, for a retest, provide a measurably significant indication), of a change in the nature or extent of the release at that well, if ***either:***

(a) Two or more of the monitoring parameters exceed their respective MDL, *or*
(b) At least one monitoring parameter equals or exceeds its PQL.

b. Discrete Retest [27 CCR §20415(e)(8)(E)]:

i. In the event that the Discharger concludes (pursuant to paragraph A.5.a.ii, above) that there is a tentative indication of a release, then the Discharger shall immediately notify Regional Board staff by phone or e-mail and, within 30 days of such indication, shall collect two new (retest) samples from the indicating compliance well.

ii. The Discharger shall analyze the retest samples only for those constituents indicated in the original test, under paragraph A.5.a.ii, above, and these indicated constituents shall comprise the "modified scope list." As soon as the retest data are available, the Discharger shall apply the same test (under paragraph A.5.a.ii, above, but using this modified scope list) to separately analyze each of the two suites of retest data at that compliance well.

iii. If either (or both) of the retest samples trips either (or both) of the triggers under paragraph A.5.a.ii, then the Discharger shall conclude that there is a change in the nature or extent of the known release for the constituent(s) at that well, as indicated in the validating retest sample(s). Furthermore, thereafter, the Discharger shall monitor the indicated constituent(s) in tracking mode (see

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[4] The practical quantitation level, or PQL, is the lowest concentration of a substance that can be consistently determined within +/- 20% of the true concentration by 75% of the laboratories tested in a performance evaluation study. Alternatively, if performance data are not available, the PQL for carcinogens is the method detection limit (MDL) multiplied by 5, and for noncarcinogens is the MDL x 10. Estimated PQLs are listed in Appendix II to 40 CFR258.

paragraph A.4.f.ii of this M&RP) at that well, shall remove the constituent(s) from the scope list created (under paragraph A.5.a.i of this M&RP) for that well, and shall highlight this conclusion and these changes in the next scheduled monitoring report.

6. MONITORING PARAMETERS

a. The Discharger shall analyze separate samples from each water-bearing medium (e.g., surface water, including seeps and springs, the uppermost aquifer beneath the site, perched zones, subdrains, or soil-pore liquid [from the vadose zone[5]], and from landfill gas [LFG]) for the approved monitoring parameters and frequencies listed in Attachment D, Table 1 of this M&RP. The monitoring parameters include metal surrogates and the VOCs listed in Appendix I pursuant to 40 CFR 258.54(a)(2). The monitoring parameters must be analyzed in accordance with the methods listed in Attachment D, Table 6 of this M&RP.

b. For any constituents that are detected at concentrations above their respective MDL in 10% or less of the background data to date, the constituent's concentration limit shall be its MDL at any given time. The Discharger shall analyze the data for these monitoring parameters using the CNSDAM described in paragraph A.5 of this M&RP.

c. For any constituents that are detected at concentrations above their respective MDL in more than 10% of the background data to date, the constituent's concentration limit shall be its background value at any given time. The Discharger shall analyze the data for these monitoring parameters using an appropriate statistical data analysis method as allowed in paragraph A.4 of this M&RP.

d. The Discharger shall test the analytical data from all monitored media, except leachate, LFG, and LFG condensate, using the **statistical methods** as allowed in paragraph A.4 of this M&RP and 27 CCR §20415(e)(8) for the following parameters:

   i. **General Chemistry** — Bicarbonate, Carbonate, Chemical Oxygen Demand (COD), Chloride, Nitrate (as Nitrogen), Sulfate, Total Dissolved Solids (TDS), pH, Hydroxide, Dissolved Carbon Dioxide, and Total Alkalinity;

   ii. **Leachate Indicator Metals** — Calcium, Iron, Magnesium, Manganese, Potassium, and Sodium;

   iii. **Detectable VOCs in Background** — Each VOC that exceeds its respective MDL in at least ten percent (10%) of the applicable background data set for a monitored water-bearing medium during a given reporting period;

   iv. **Other Monitoring Parameters** — Any monitored Appendix II constituent not covered under paragraphs A.6.d.iii, above, that exceeds its respective MDL in at least 10% of the applicable background data set for a monitored water-bearing medium during a given reporting period.

e. Monitoring parameters for the required monitoring program at the CSL shall be approved by the Executive Officer of the Regional Board. The Executive Officer may approve alternative monitoring parameters that meet the requirements of both 27

[5] The vadose zone, or zone of aeration, is a subsurface zone that is located directly above the water table and contains water at less than atmospheric pressure. The vadose zone includes water held by capillarity, and air or gases held generally under atmospheric pressure.

CCR §20380 et seq. and 40 CFR §258.54. The Executive Officer may also approve alternative statistical or non-statistical methods that meet the requirements of 27 CCR §20415(e) and 40 CFR §258.53.

7. CONSTITUENTS OF CONCERN (COC)

a. For unlined portions of the landfill, i.e. West and East Landfills, COC-List 1 shall consist of those constituents listed in Attachment D, Table 1 of this M&RP.

b. For the lined portion of the landfill, the Discharger shall develop and maintain COC-List 2 (Attachment D, Table 7 of this M&RP) under 27 CCR §20395 as follows:

i. **Initial COC-List 2** – The Discharger shall analyze the first annual leachate sample for all Appendix II constituents (see Attachment D, Table 4 for a list of Appendix II constituents). The initial COC-List 2 shall consist of those Appendix II constituents that are detected in the first annual leachate sample and confirmed in its leachate retest sample collected from the lined cell; and

ii. **Building and augmenting COC-List 2** – The initial COC-List 2 shall be updated annually through annual leachate testing of any Appendix II constituents that are not already on the COC-List 2. The COC-List 2 shall be augmented by adding an Appendix II constituent not already on the COC-List 2 that was both:

(a) Detected in the annual October sampling of the landfill's leachate (see paragraph B.1.b.v. of this M&RP); and

(b) Also detected in the retest of a leachate sample collected the following April.

8. ESTABLISHING BACKGROUND VALUES

a. **For Existing Monitoring Points** — Whenever a new COC is established, under paragraphs A.3.b.ii of this M&RP, the Discharger shall establish the prevailing concentration of that constituent by taking one sample at least quarterly for two years at each background and downgradient monitoring point. The Discharger shall use these data:

i. To validate downgradient monitoring well data relative to upgradient well data via box-and-whiskers plots;

ii. To show that it is reasonable to assume that each downgradient well's data do not reflect a release; and

iii. Subsequent to such validation, to serve as the initial background data set for intra-well comparisons at that well.

b. **For New Monitoring Points** — For any new upgradient or downgradient well installed less than two years prior to or after the effective date of this M&RP, the Discharger shall establish the prevailing concentration for each COC by taking at least one sample quarterly for two years. These data shall be used, as described in i) and ii) of paragraph A.8.a, above.

9. UNSATURATED (VADOSE) ZONE MONITORING

The purpose of an unsaturated zone monitoring program is to provide the best assurance of the earliest possible detection of a release from the landfill. Soil pore liquids from the existing lysimeters, and landfill gas from the perimeter gas probe with the highest methane reading, shall be collected and analyzed for the monitoring parameters listed in Attachment D, Table 1 on a quarterly basis. Monitoring of LFG is considered necessary in order to provide a method for detecting LFG-transported constituents that may not be detected in soil pore liquids and that could impact groundwater beneath the facility. After two years of LFG data have been collected and compared to the other water quality monitoring parameters at the site, the Discharger may request a decrease in the frequency of monitoring or in the number of perimeter probes monitored for water quality purposes if it can be shown that the quality and types of the data collected at the site will not be adversely impacted.

B. MONITORING PROGRAM

1. WATER QUALITY MONITORING

a. Sample collection, storage, and analysis shall be performed according to the most recent version of Standard United States Environmental Protection Agency (USEPA) Methods (USEPA Publication "SW-846").

b. The Discharger shall comply with the requirements of 27 CCR §20415 for any water quality monitoring program developed to satisfy 27 CCR §20420, §20425, §20430, and the requirements of this order.

   i. The groundwater monitoring shall meet the requirements of 27 CCR §20415(b) and 40 CFR §258.51 (a, c, and d).

   ii. The surface water monitoring shall meet the requirements of 27 CCR §20415(c). In addition, whenever possible, volumetric flow rate shall be measured, or, at a minimum, visually estimated, for surface water and seeps or springs monitored at the site.

   iii. Unsaturated zone monitoring shall meet the requirements of 27 CCR §20415(d) and shall be conducted in accordance with paragraph A.9 of this M&RP.

   iv. All general monitoring requirements shall be in accordance with 27 CCR §20415(e).

   v. Pursuant to 40 CFR §258.55 (b), the October leachate sample(s)[6] shall be analyzed for all the constituents of Appendix II (to 40 CFR §258) that have not, to date, been detected in the landfill's leachate and shall be verified by resampling. If the October leachate testing identifies any new Appendix II constituents that have not been previously detected in the leachate, the Discharger shall obtain a single leachate retest sample the following April and analyze it for the new constituents. Any such new constituents verified in the April retest become part of the landfill's COC-List 2. For each newly detected COC, the Discharger shall establish an initial background data set in accordance with paragraph A.8 of this M&RP. A new COC detected and verified in the groundwater shall be added to the MP list in accordance with paragraph A.3.b.ii of this M&RP.

c. In the event that a release is identified at the CSL, the Discharger must implement

[6] The October leachate sampling is only required for the lined portion of the landfill.

both the state EMP and the federal AMP within 90 days of the confirmation of the release. The EMP must meet the requirements contained in 27 CCR §20425, and the federal AMP must meet any additional requirements contained in 40 CFR §258.55. Therefore, the Discharger shall:

i. Within 30 days of the confirmation of the release, submit a proposal and compliance schedule for implementing an EMP and an AMP.

ii. Within 90 days of the confirmation of the release, submit a preliminary Engineering Feasibility Study (EFS) under 27 CCR §20425. The Discharger shall also begin an Assessment of Corrective Measures (ACM) and Selection of Remedy (SOR) under 40 CFR §§258.55, 258.56, and 258.57, respectively, to the extent that these federal requirements are not addressed by the EMP or the landfill's current monitoring program. The preliminary EFS shall include a substantiated list of proposed realistic dates for meeting all applicable milestones of the EMP/ AMP, ACM, and SOR.

iii. Within 180 days of the confirmation of the release, submit an EMP progress report, a final EFS, and a draft amended Joint Technical Document (JTD), meeting the requirements of 27 CCR §20425(c) and (d) and 40 CFR §258.56, §258.57, and §258.58, to establish a CAP.

d. Regardless of the monitoring program in effect (EMP/ AMP or CAP), the Discharger shall continue to monitor groundwater for all well/MP pairs in accordance with paragraph A.4.f of this M&RP.

2. GENERAL SITE MONITORING

a. All general site inspections shall be documented; all deficiencies identified during general site monitoring shall be transmitted to the Regional Board via facsimile (FAX), e-mail, or other approved method, within 48 hours of occurrence. This same documentation must also be submitted as part of the reports described in paragraph C.4.b. of this M&RP.

b. At a minimum, all systems, such as landfill gas condensate and leachate containment structures, subdrains, sumps, and lysimeters, shall be inspected and evaluated on a weekly basis for their effectiveness. All deficiencies identified, and the dates and types of corrective action taken, shall be recorded in a permanent log. All deficiencies shall be photographed (if possible) for the record. The volume of liquids collected in each containment structure shall be recorded weekly for active sites. Liquid samples, such as gas condensate and leachate, shall be collected in accordance with the appropriate monitoring frequency, and analyzed for constituents specified in Attachment D, Table 1 of this M&RP.

c. Monthly, the Discharger shall inspect all waste management units and shall evaluate their effectiveness to comply with Drainage and Erosion Control D.1 of Order No. R8-2004-0008. All areas of slope failure, differential settlement, fissuring, erosion, ponding, leachate staining, and seepage into or from the landfill shall be identified, field-marked, documented, and mitigated. In the event seepage is discovered, the location of each seep shall be mapped and a mitigation plan submitted for the

approval of the Executive Officer of the Regional Board. All findings shall be photographed for the record.

d. At a minimum, all run-on and runoff drainage control structures shall be inspected and evaluated monthly for their effectiveness. During dry weather conditions, the effectiveness of the drainage control system shall be evaluated on the basis of its conformance to the as-built drawings, or revised drawings, for the system. All deficiencies shall be identified, recorded and mitigated. Any failure of the drainage and erosion control system at the site must be reported to the Executive Officer of the Regional Board within 24 hours of the occurrence of the event, and repairs implemented immediately.

e. Annually, **by October 15**, an aerial or ground survey of the landfill facility shall be performed in accordance with the schedule in Attachment D, Table 5 of this M&RP.

C. REPORTING

1. **Monitoring report contents** — All reports shall be submitted no later than one month following the end of their respective monitoring period. The reports shall be comprised of at least the following, in addition to the specific contents listed for each type of report:

   a. **Transmittal letter** — A letter summarizing the essential points in the report. This letter shall include a discussion of any violations or deficiencies found since the last such report was submitted, and shall describe corrective actions taken or planned;

   b. **Compliance evaluation summary** — For groundwater monitoring and COC reports, a compliance evaluation summary shall be included which references the sampling and quality assurance plans. The compliance evaluation summary shall include at least the following:

      i. **Flow rate/direction** — For each monitoring point addressed by the report, a tabular summary and graphical presentation of the measured groundwater elevation data for the previous 5 years, and a description and graphical presentation (e.g., arrow on a map) of the velocity and direction of groundwater flow under/around CSL, based upon water level elevations taken during the collection of the water quality samples;

      ii. **Well information** — For each monitoring well addressed by the report, a description of the method and time of water level measurement, and a description of the method of purging used to remove stagnant water in the well before sampling, pursuant to 27 CCR §20415(e)(12)(B);

      iii. **Sampling Information** — For each monitoring point addressed by the report, a description of the type of pump or other device used and its vertical placement for sampling, and a detailed description of the sampling procedures (number and description of the samples, field blanks, travel blanks, and duplicate samples taken, the type of containers and preservatives used, the date and time of sampling, the name and qualifications of the person actually taking the samples, and any other observations); and

      iv. A discussion of any activities that deviated from the sampling and quality assurance plans.

c. **Map** — A map (or copy of an aerial photograph) showing the locations of observation stations and monitoring points;

d. **Laboratory data** — The laboratory results of all analyses shall be submitted in accordance with paragraph C.4.a of this M&RP, and shall indicate for each analyte that is detected at less than its respective PQL:

   i. The PQL or the estimated MDL;

   ii. An indication as to whether the constituent was detected or not; and

   iii. In the case of a trace detection, the estimated concentration, if possible.

e. **Statistical verification procedure and reporting** — Per 27 CCR §20415(e)(8)(E)(6), the Discharger shall notify the Executive Officer of the Regional Board by certified mail of the results of both the initial statistical test and the results of the verification procedure, as well as all concentration data collected for use in these tests within seven (7)days of the last laboratory analysis of the samples collected for the verification procedure;

f. **Landfill gas condensate and leachate containment systems, subdrain, and lysimeter monitoring** — A statement as to the condition and performance of these systems and monitoring points;

g. **Permanent and interim drainage and erosion control systems** — A statement as to the condition and performance of these systems;

h. **Waste type and placement** — The quantity and types of wastes discharged and a map indicating the locations in the landfill where waste has been placed since submittal of the last such report; and

i. If alternative daily cover (ADC) is used at the site that meets the requirements of 27 CCR §20705(e), and has been approved by Regional Board staff, the type, amount (including, if applicable, average thickness), method of placement, and any problems or deficiencies encountered must be noted in the report.

2. **October leachate sampling results** — The Discharger shall report to the Regional Board, no later than **January 31 of each year**, the analytical results of the leachate sample taken the previous October, including an identification of all detected Appendix II constituents that are not on the landfill's COC-List 2 (non-COCs).

3. **April retest results** — If the annual leachate sample taken in October identifies any non-COCs, the Discharger shall collect and analyze a retest sample the following April. The retest sample shall be analyzed only for the non-COCs detected in the October sample. During any year in which an April leachate retest is carried out, the Discharger shall submit a report to the Regional Board no later than August 1 of that year. This report must identify all constituents that were detected in both the previous calendar year's October sample and in the April retest sample, and must permanently add these constituents to the landfill's COC-List 2. The report shall also include an updated COC-List 2 that includes the Appendix II constituents that are newly detected in both the October and April leachate samples.

4. **Compliance monitoring reports**

a. The Discharger shall submit water quality monitoring and analytical data (pursuant to paragraphs B.1 of this M&RP) for the monitoring periods and reporting due dates specified in Attachment D, Table 5 of this M&RP. The Discharger may propose an alternate schedule, and the Executive Officer may approve the proposal, or may require the Discharger to comply with an alternate reporting frequency.

b. General site monitoring and analytical data (pursuant to paragraphs B.2.a, b, c, and d of this M&RP) shall be submitted for the monitoring periods and reporting due dates specified in Attachment D, Table 5 of this M&RP. When necessary, abbreviated reports shall also be submitted under the following conditions:

i. Within 48 hours of the occurrence or identification of any deficiencies or failures of on-site systems such as landfill gas condensate and leachate containment structures, groundwater extraction and treatment systems, subdrains, and lysimeters. A brief synopsis, including the identified deficiencies, pertinent photographs, and the date and type of corrective action that has, or will be, taken to correct these deficiencies, shall be forwarded to Regional Board staff.

ii. If any areas of slope failure, differential settlement, fissuring, erosion, ponding, leachate staining, and/ or seepage into or from the landfill are identified, a brief report with pertinent photographs and the date and type of corrective action that has, or will be, taken to correct these deficiencies, shall be submitted to Regional Board staff within 48 hours of the occurrence of the event.

iii. During the rainy season, the Discharger shall submit a brief "storm report" within 48 hours of a major storm event (defined as any storm that results in the site receiving more than 0.5 inches of precipitation within a 24-hour period). This report shall include pertinent photographs, the identification of any deficiencies, and the date and type of corrective action that has, or will be, taken to correct these deficiencies.

5. **Annual summary report** — The Discharger shall submit an annual report to the Regional Board covering the previous monitoring year (April 1 of the previous year through March 31 of the following year). The annual summary reports are due on **April 30** (see Attachment D, Table 5 of this M&RP). This report may be combined with the monitoring report period ending March 31, and shall meet the following requirements:

a. **Graphical Presentation** — All graphs shall include, at a minimum, the last five (5) years of available data for that monitoring point or constituent. Trend analyses shall include analysis of trends that have been identified over the last monitoring year, and analysis of any newly identified trends, significant changes in a known trend, or trend reversals identified in the historical data collected over the last 5 years for groundwater, surface water (including seeps and springs), and vadose zone monitoring points (subdrains, lysimeters, or LFG);

i. Graphing of the Analytical Data shall be in accordance with 27 CCR §20415(e)(14):

(a) All graphs shall be at a scale appropriate to show trends or variations in water quality;

(b) All graphs for a given constituent shall be plotted at the same scale to facilitate visual comparison of monitoring data;
(c) Each graph shall represent data from one compliance or background monitoring point and one COC or monitoring parameter.

ii. Graphing of analytical data shall also include pertinent constituent trend charts for groundwater, surface water, vadose zone monitoring points, or other mediums of interest that provide a comparison of both the background and compliance monitoring data, and an indication of the behavior of constituents in the various media at the site.

b. **Hydrographs** shall be provided for analysis and identification of any historical groundwater elevation fluctuations at the site. Background wells and compliance wells within the same aquifer shall be plotted on the same graph for comparison.

c. **Table and diskette(s)** — Data for all monitoring parameters detected at measurably significant concentrations (at or above the MDL) during the previous twelve months shall be presented in hard copy tabular form as well as on floppy disk, CD-ROM, or in a commonly available compressed format (e.g., WinZip or NORTON BACKUP) in accordance with 27 CCR §20420(h). The data shall be presented in MS-DOS/ASCII format, EXCEL, or other file format acceptable to the Executive Officer of the Regional Board. This data set shall also include the background data used as a reference in detecting the measurably significant increase.

d. **Compliance record discussion** — A comprehensive discussion of the compliance record, and of any corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the landfill's waste discharge requirements.

e. **Waste allocation map** — A map showing the area, if any, in which filling has been completed during the previous calendar year.

f. **Summary of changes** — A written summary of monitoring results and monitoring and control system(s), indicating any changes made or observed since the previous annual report.

g. **Leachate and gas control** — For units having leachate and gas monitoring/ control facilities, an evaluation of the effectiveness of the liquid waste containment units, pursuant to 27 CCR §20340 (b, c, & d). The evaluation shall also include a tabular summary of a list of deficiencies identified and the dates and types of corrective actions taken to achieve compliance with the requirements contained in this order.

6. **Annual drainage control and maintenance report** — By October 1 of each year, all drainage and erosion control system construction and maintenance activities shall be completed. In accordance with Drainage and Erosion Control D.5 of Order No. R8-2004-0008, annually, by **December 31**, a site drainage control and maintenance report containing the following information shall be submitted:

a. For the previous 12 months, a summary of the adequacy and effectiveness of both permanent and interim drainage control systems to collect and divert the calculated volume of precipitation and peak flows resulting from a 100-year, 24-hour storm.

b. A tabular summary of the new and existing drainage control structures, including the type of structure and its dimensions (especially for conveyance structures), and the completion dates of maintenance activities performed for each of the structures.

c. An 11 x 17 inch or larger facility site map indicating the location of the elements listed in item b, above, of this M&RP, and the flow direction of site drainage.

7. **Five-Year COC Scan** — In conducting the five-yearly COC scan, under paragraph A.3.b of this M&RP:

   a. If a previously undetected COC is discovered and verified in any monitoring well, the Discharger shall inform Regional Board staff by telephone of the well and constituent involved, and shall take and analyze a retest sample from the indicating well within 30 days, analyzing only for the newly detected constituent.

   b. If the retest sample verifies the presence of the constituent, then, within 7 days:

      i. The Discharger shall communicate the verification to Regional Board staff by phone,

      ii. The constituent shall be added to the monitoring parameter list for the site,

      iii. The Discharger shall insert a dated copy of the revised monitoring parameter list in the Operating Record, and

      iv. The Discharger shall report the new monitoring parameter prominently in the next monitoring report thereafter.

8. **Reporting Schedule** - The Discharger shall submit all reports and documents in accordance with the deadlines specified in Attachment D, Table 5 of this M&RP.

9. **Signature** - All reports shall be signed by a responsible officer or a duly authorized representative of the Discharger and shall be submitted under penalty of perjury.

I, Gerard J. Thibeault, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, Santa Ana Region.

Gerard J. Thibeault
Executive Officer

April 30, 2004

Attachment D - Table 1

Program	Monitoring Parameters	Monitoring Frequency
Detection monitoring	pH, total dissolved solids, chloride, sulfate, nitrate (as nitrogen), bicarbonate, carbonate, chemical oxygen demand (COD), hydroxide, dissolved carbon dioxide, total alkalinity, and 47 Appendix I VOCs[7]	Quarterly
COC-List 1 analysis[8]	General minerals[9] and Appendix II constituents[10]	Once every five years
COC-List 2 analysis[11]	[12]	Once every five years
Vadose zone monitoring	Methane (field), total gaseous non-methane organic (TGNMO), and the 17 core group VOCs per SCAQMD Rule 1150.1	Quarterly
Surface water monitoring[13]	pH, total dissolved solids, chloride, sulfate, nitrate (as nitrogen), bicarbonate, carbonate, chemical oxygen demand (COD), hydroxide, dissolved carbon dioxide, total alkalinity, and 47 Appendix I VOCs[7]	Quarterly
Leachate monitoring	General minerals[9] and Appendix II constituents[10]	Annually

[7] See Table 3.
[8] COC analysis for Monitoring Wells BC-1C, 10C, and 4R and any subsequent new/replacement wells installed for the existing units (East and West Side Landfills).
[9] See Table 2.
[10] See Table 4.
[11] COC analysis for Monitoring Wells B-11, 12, 13, and 14, and any subsequent new/replacement wells installed for the expansion area.
[12] See Table 7.
[13] Water samples, one upstream and one downstream of the landfill site, shall be collected from the Santa Ana River Channel whenever available and accessible.

Attachment D - Table 2

LIST OF GENERAL MINERALS

Parameter	USEPA Method	Parameter	USEPA Method
Total Hardness	130	Total Dissolved Solids	160.1
Bicarbonate (HCO_3)	310.1	Chemical Oxygen Demand	410.4
Carbonate ($CaCO_3$)	310.1	Phenols	420.1
Total Alkalinity	310.1	Total Organic Carbon	415
Total Cations	[14]	Total Organic Halogens	450.1
Total Anions	[14]	Calcium (Ca)	200.7/215
Hydroxide (OH)	[15]	Magnesium (Mg)	200.7/242.1
Chloride (Cl)	325	Manganese (Mn)	200.7/243.1
Fluoride (F)	340	Potassium (K)	200.7/258.1
Nitrate (NO_3) as Nitrogen	353.2	Sodium (Na)	200.7/273.1
Sulfate (SO_4)	375	Iron (Fe)	200.7/236.1
Phosphate (PO_4)	365.2	Zinc (Zn)	200.7/289.1
Total Phosphorus	365.1/365.2		
Boron (B)	212.3/200.7		
Specific Conductance (Electrical Conductivity - EC)	120.1		
pH	150.1		

[14] Total cations and anions are determined by the summation of all cations and anions, respectively, in the sample analyzed.

[15] The standard method, SM 2330B, in the "Standard Methods for the Examination of Water and Wastewater" for hydroxide ion analysis shall be used.

Attachment D - Table 3

LIST OF APPENDIX I CONSTITUENTS

Inorganic Constituents	**Organic Constituents – continued**
Antimony	p-Dichlorobenzene; 1,4-Dichlorobenzene
Arsenic	trans-1,4-Dichloro-2-butene
Barium	1,1-Dichloroenthane; Ethylidene chloride
Beryllium	1,2-Dichloroethane; Ethylene dichloride
Cadmium	1,1-Dichloroethylene; 1,1-Dichloroethane; Vinylidene chloride
Chromium	cis-1,2-Dichloroethylene; cis-1,2-Dichloroethene
Cobalt	trans-1,2-Dichloroethylene; trans-1,2-Dichloroethene
Copper	1,2-Dichloropropane; Propylene dichloride
Lead	cis-1,3-Dichloro propene
Nickel	trans-1,2-Dichloropropene
Selenium	Ethylbenzene
Silver	2-Hexanone; Methyl butyl ketone
Thallium	Methyl bromide; Bromomethane
Vanadium	Methyl chloride; Chloromethane
Zinc	Methylene bromide; Dibromomethane
	Methylene chloride; Dichloromethane
Organic Constituents	Methyl ethyl ketone; MEK; 2-Butanone
Acetone	Methyl iodide; Iodomethane
Acrylonitrile	4-Methyl-2-pentanone; Methyl isobutyl ketone
Benzene	Styrene
Bromochloromethane	1,1,1,2-Tetrachloroethane
Bromodichloromethane	1,1,2,2-Tetrachloroethane
Bromoform; Tribromomethane	Tetrachloroethylene; Tetrachloroethene; Perchloroethylene
Carbon disulfide	Toluene
Carbon tetrachloride	1,1,1-Trichloroethane; Methylchloroform
Chlorobenzene	1,1,2-Trichloroethane
Chloroethane; Ethyl chloride	Trichloroethylene; Trichloroethene
Chloroform; Trichloromethane	Trichlorofluoromethane; CFC-11
Dibromochloromethane; Chlorodibromomethane	1,2,3-Trichloropropane
1,2-Dibromo-3-chloropropane; DBCP	Vinyl acetate
1,2-Dibromoethane; Ethylene dibromide; EDB	Vinyl chloride
o-Dichlorobenzene; 1,2-Dichlorobenzene	Xylenes

Attachment D - Table 4

APPENDIX II CONSTITUENTS

Acenaphthene
Acenaphthylene
Acetone
Acetonitrile; Methyl cyanide
Acetophenone
2-Acetylaminofluorene; 2-AAF
Acrolein
Acrylonitrile
Aldrin
Allyl chloride
4-Aminobiphenyl
Anthracene
Antimony (total)
Arsenic (total)
Barium (total)
Benzene
Benzo[a]anthracene; Benzanthracene
Benzo[b] fluoranthene
Benzo[k] fluoranthene
Benzo[ghi] perylene
Benzo[al pyrene
Benzyl alcohol
Beryllium (total)
alpha-BHC
beta-BHC
delta-BHC
gamma-BHC; Lindane
Bis(2-chloroethoxy) methane
Bis(2-chloroethyl) ether; Dichloroethyl ether
Bis(2-chloro-1-methylethyl) ether; 2,2-Dichlorodiisopropyl ether; DCIP
Bis(2-ethylhexyl) phthalate
Bromochloromethane; Chlorobromomethane
Bromodichloromethane; Dibromochloromethane
Bromoform; Tribromomethane
4-Bromophenyl phenyl ether
Butyl benzyl phthalate; Benzyl butyl phthalate
Cadmium (total)
Carbon disufide
Carbon tetrachloride
Chlordane
p-Chloroaniline
Chlorobenzene
Chlorobenzilate
p-Chloro-m-cresol; 4-Chloro-3-methylphenol
Chloroethane; Ethyl chloride
Chloroform; Trichloromethane
2-Chloronaphthalene
2-Chlorophenol
4-Chlorophenyl phenyl ether
Chloroprene
Chromium (total)
Chrysene
Cobalt (total)
Copper (total)
m-Cresol; 3-methylphenol
o-Cresol; 2-methylphenol
p-Cresol; 4-methylphenol
Cyanide
2,4-D; 2,4-Dichlorophenoxyacetic acid
4,4-DDD
4.4-DDE
4,4-DDT
Diallate
Dibenz [a,h] anthracene
Dibenzofuran
Dibromochloromethane; Chlorodibromomethane
1,2-Dibromo-3-chloropropane; DBCP
1,2-Dibromoethane; Ethylene dibromide; EDB
Di-n-butyl phthalate
o-Dichlorobenzene; 1,2-Dichlorobenzene
m-Dichlorobenzene; 1,3-Dichlorobenzene
p-Dichlorobenzene; 1,4-Dichlorobenzene
3,3-Dichlorobenzidine
trans-1,4-Dichloro-2-butene
Dichlorodifluoromethane; CFC 12
1,1-Dichloroethane; Ethyldidene chloride
1,2-Dichloroethane; Ethylene dichloride
1,1-Dichloroethylene; 1,1-Dichloroethene; Vinylidene chloride
cis-1,2-Dichloroethylene; cis-1,2-Dichloroethene
trans-1,2-Dichloroethylene; trans-1,2-Dichloroethene
2,4-Dichlorophenol
2,6-Dichlorophenol
1,2-Dichloropropane; Propylene dichloride
1,3-Dichloropropane; Trimethylene dichloride
2,2-Dichloropropane; Isopropylidene chloride
1,1-Dichloropropene
cis-1,3-Dichloropropene
trans-1,3-Dichloropropene
Dieldrin
Diethyl phthalate
0,0-Diethyl 0-2-pyrazinyl phosphorothioate; Thionazin
Dimethoate
p-(Dimethylamino)azobenzene
7,12-Dimethylbenz[a]anthracene
3,3-Dimethylbenzidine
2,4-Dimethylphenol; m-Xylenol
Dimethyl phthalate
m-Dinitrobenzene
4,6-Dinitro-o-cresol; 4,6-Dinitro-2-methylphenol
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
Dinoseb; DNBP; 2-sec-Butyl-4,6-dinitrophenol
Di-n-octyl phthalate
Diphenylamine
Disulfoton
Endosulfan I
Endosulfan II
Endosulfan sulfate

Endrin
Endrin aldehyde
Ethylbenzene
Ethyl methacrylate
Ethyl methanesulfonate

Table 4 (continued)

LIST OF APPENDIX II CONSTITUENTS

Famphur
Fluoranthene
Fluorene
Heptachlor
Heptachlor epoxide
Hexachlorobenzene
Hexachlorobutadiene
Hexachlorocyclopentadiene
Hexachloroethane
Hexachloropropene
2-Hexanone; Methyl butyl ketone
Indeno (1,2,3-cd) pyrene
Isobutyl alcohol
Isodrin
Isophorone
Isosafrole
Kepone
Lead (total)
Mercury (total)
Methacrylonitrile
Methapyrilene
Methoxychlor
Methyl bromide; Bromomethane
Methyl chloride; Chloromethane
3-Methylcholanthrene
Methyl ethyl ketone; MEK; 2-Butanone
Methyl iodide; Iodomethane
Methyl methacrylate
Methyl methanesulfonate
2-Methylnaphthalene
Methyl parathion; Parathion methyl
4-Methyl-2-pentanone; Methyl isobutyl ketone
Methylene bromide; Dibromomethane
Methylene chloride; Dichloromethane
Naphthalene
1,4-Naphthoquinone
1-Napthylamine
2-Napthylamine
Nickel (total)
o-Nitroaniline; 2-Nitroaniline
m-Nitroaniline; 3-Nitroaniline
p-Nitroaniline; 4-Nitroaniline
Nitrobenzene
o-Nitrophenol; 2-Nitrophenol
p-Nitrophenol; 4-Nitrophenol
N-Nitrosodi-n-butylamine
N-Nitrosodiethylamine
N-Nitrosodimethylamine
N-Nitrosodiphenylamine
N-Nitrosodipropylamine; N-Nitroso-N-dipropylamine; Di-n-propylnitrosamine
N-Nitrosomethylethylamine
N-Nitrosopiperidine
N-Nitrosopyrrolidine
5-Nitro-o-toluidine
Parathion
Pentachlorobenzene
Pentachloronitrobenzene
Pentachlorophenol
Phenacetin
Phenanthrene
Phenol
p-Phenylenediamine
Phorate
Polychlorinated biphenyls; PCBS; Aroclors
Pronamide
Propionitrile; Ethyl cyanide
Pyrene
Safrole
Selenium (total)
Silver (total)
Silvex; 2,4,5-TP
Styrene
Sulfide
2,4,5-T; 2,4,5-Trichlorophenoxyacetic acid
1,2,4,5-Tetrachlorobenzene
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
Tetrachloroethylene; Tetrachloroethene; Perchloroethylene
2,3,4,6-Tetrachlorophenol
Thallium (total)
Tin (total)
Toluene
o-Toluidine
Toxaphene
1,2,4-Trichlorobenzene
1,1,1-Trichloroethane; Methylchloroform
1,1,2-Trichloroethane
Trichloroethyiene; Trichloroethene
Trichlorofluoromethane; CFC-1 I
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
1,2,3-Trichloropropane
0,0,0-Triethyl phosphorothioate
sym-Trinitrobenzene
Vanadium (total)
Vinyl acetate
Vinyl chloride; Chloroethene
Xylenes (total)
Zinc (total)

Attachment D – Table 5

Monitoring & Reporting Schedules

Task Description	Monitoring Period	Report Due Date
Quarterly water quality and general site monitoring	October 1 – December 31	January 31 of each year
	January 1 – March 31	April 30 of each year
	April 1 – June 30	July 31 of each year
	July 1 – September 30	October 31 of each year
October leachate analysis	October 1 – October 31	January 31 of the following year
April leachate retesting analysis	April 1 - April 30	August 1 of each year
Annual drainage control and maintenance	By October 1 of each year	December 31 of each year
Aerial or ground survey	By October 15 of each year	December 31 of each year
Annual summary	April 1 of previous year – March 31	April 30 of each year
COC analysis	January 1 – March 31, 2004	April 30, 2004
	July 1 – September 30, 2009	October 31, 2009 and every fifth year thereafter, alternately in the Spring (April 30) and Fall (October 31).

Attachment D – Table 6

LIST OF ANALYTICAL PARAMETERS AND METHODS

Parameter	USEPA Method*	Method Description	Container	Preservative
LIQUIDS MONITORING				
Ammonia as Nitrogen	350.1	Colorimetric, Automated, Phenate	Plastic	Cool, 4°C
Bicarbonate (HCO_3)	310.1	Titrimetric	Plastic	Cool, 4°C
Carbonate ($CaCO_3$)	310.1	Titrimetric	Plastic	Cool, 4°C
Chemical Oxygen Demand	410.4	Colorimetric	Plastic	Cool, 4°C
Chloride (Cl)	325	Ion Chromatography	Plastic	Cool, 4°C
pH	150.1	Electrometric	Plastic	Cool, 4°C
Nitrate (NO_3) As Nitrogen	353.2	Ion Chromatography	Plastic	Cool, 4°C
Sulfate (SO_4)	375	Ion Chromatography	Plastic	Cool, 4°C
Total Dissolved Solids (TDS)	160.1	Gravimetric	Plastic	Cool, 4°C
Calcium (Ca)	200.7/215	ICP/ ICP-MS	Plastic	Nitric Acid - 4°C
Iron (Fe)	200.7/236.1	ICP/ ICP-MS	Plastic	Nitric Acid - 4°C
Magnesium (Mg)	200.7/242.1	ICP/ ICP-MS	Plastic	Nitric Acid - 4°C
Manganese (Mn)	200.7/243.1	ICP/ ICP-MS	Plastic	Nitric Acid - 4°C
Potassium (K)	200.7/258.1	ICP/ ICP-MS	Plastic	Nitric Acid - 4°C
Sodium (Na)	200.7/273.1	ICP/ ICP-MS	Plastic	Nitric Acid - 4°C
Trace Metals	200 Series	ICP/ ICP-MS	Plastic	Nitric Acid - 4°C
SVOCs/ Herbicides/ Pesticides	8270	GC/ MS with Solid-phase Extraction	VOA Vial (Glass)	Hydrochloric Acid - 4°C
VOCs	8260	Purge and Trap GC/ MS	VOA Vial (Glass)	Hydrochloric Acid - 4°C
GAS MONITORING**				
Fixed Gases (CO_2, CH_4, N_2, O_2)	3 (Modified)	GC/FID	Tedlar Bag	Light-Sealed
VOCs	TO-14	GC/MS	Tedlar Bag	Light-Sealed

Attachment D - Table 7

COC-List 2

(To be attached when it is available)

The initial COC-List 2 shall consist of all Appendix II constituents detected in the first October annual leachate sample and confirmed in the following April leachate sample retest. The initial COC-List 2 shall be augmented by adding any newly detected Appendix II constituents found during subsequent annual leachate and April confirmation retest. An updated COC-List 2 shall be submitted by August 1 of each year.